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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,260	03/29/2004	Shaun Kazuo Wakumoto	200400253-1	2771

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EXAMINER

WONG, WARNER

ART UNIT	PAPER NUMBER
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2416

NOTIFICATION DATE	DELIVERY MODE
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04/02/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/812,260	Applicant(s) WAKUMOTO ET AL.	
	Examiner WARNER WONG	Art Unit 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-3, 8-9, 15-17 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Bryant (US 2005/0078656) in view of Luo (US 6,377,551).

Regarding claim 1, Bryant describes a method for cost determination for paths between switches in a mesh (fig. 1), comprising:

defining a set of paths between each pair of the mesh switches (para. 38, SPT path routes are calculated for each router/switch);

calculating start-up costs for the paths (para. 36, LSDB contains the calculated lowest-cost metric for the path routes).

recalculating costs for the previously defined paths using a cost protocol (abstract & para. 35, updating (recalculating) routing information comprising cost metric after a delay).

Bryant fails to explicitly describe: the recalculation uses a directed cost protocol.

Luo describes a route computation method comprising: recalculation using a directed cost protocol (fig. 3 step 44, route determination method (protocol) re-evaluates (recalculates) based on a directed graph (directed cost), fig. 17 & col. 8, lines 64-67).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to specify that the recalculation of Bryant is performed using a directed cost protocol as in Luo.

The motivation for combining the teachings is that it provides an improved route computation algorithm for communication network (Luo, col. 2, lines 40-42).

Regarding claim 2, Bryant further describes:

the directed cost protocol comprises generating at a first switch a cost packet with path information associated with a specific path (para. 5, each network node (first switch) advertises (generates) a cost metric associated with each link (path)).

Regarding claim 3, Bryant further describes:

unicasting the cost packet via the specific path to a second switch (para. 6, the generation & propagation (= forwarding) of the link state advertisement packet from one switch/router to another is equivalent to unicasting).

Regarding claim 8, Bryant further describes:

start-up cost packets are flooded through the mesh in order to define the set of paths between each pair of mesh switches and calculate the start-up costs (para. 6, flooding of costs using LSP packets in order to calculate and determine the lowest cost paths between each network node pair).

Regarding claim 9, Bryant describes a mesh network for cost determination for paths between switches in a mesh (fig. 1), comprising:

means for defining a set of paths between each pair of the mesh switches (para. 38, SPT path routes are calculated for each router/switch);

means for calculating start-up costs for the paths (para. 36, LSDB contains the calculated lowest-cost metric for the path routes).

means for recalculating costs for the previously defined paths using a cost protocol (abstract & para. 35, updating (recalculating) routing information comprising cost metric after a delay).

Bryant fails to explicitly describe: the recalculation uses a directed cost protocol.

Luo describes a route computation method comprising: recalculation using a directed cost protocol (fig. 3 step 44, route determination method (protocol) re-evaluates (recalculates) based on a directed graph (directed cost), fig. 17 & col. 8, lines 64-67).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to specify that the recalculation of Bryant is performed using a directed cost protocol as in Luo.

The motivation for combining the teachings is that it provides an improved route computation algorithm for communication network (Luo, col. 2, lines 40-42).

Regarding claim 15, Bryant describes a packet switch apparatus in a switch mesh (fig. 1, routers comprising a mesh network), comprising:

a plurality of ports (fig. 1, each router has ports to other routers);

a switch control device coupled to the plurality of ports (para. 88-89 & fig. 12, processor 144 (switch control device) in a router);

wherein the switch control device is configured to execute cost protocol instructions in order to recalculate costs for previously defined paths (abstract & para. 35, updating (recalculating) routing information comprising cost metric after a delay).

Bryant fails to explicitly describe: the recalculation instructions use a directed cost protocol.

Luo describes a route computation method comprising: recalculation instructions use a directed cost protocol (fig. 3 step 44, route determination method (protocol) re-evaluates (recalculates) based on a directed graph (directed cost), fig. 17 & col. 8, lines 64-67).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to specify that the recalculation instructions of Bryant is performed using a directed cost protocol as in Luo.

The motivation for combining the teachings is that it provides an improved route computation algorithm for communication network (Luo, col. 2, lines 40-42).

Regarding claim 16, Bryant further describes:

generate a cost packet with path information associated with a specific path between the packet switch and another mesh switch (para. 5, each network node (first switch) advertises (generates) a cost metric associated with each link (path) to another node).

Regarding claim 17, Bryant further describes:

unicasting the cost packet via the specific path to the other mesh switch (para. 6, the generation & propagation (= forwarding) of the link state advertisement packet from one switch/router to another is equivalent to unicasting).

Regarding claim 20, Bryant further suggests:

perform a flood discovery of paths at long periodic time intervals (para. 6, flooding of costs using LSP packets, propagating the updates in the order of 20 ms [longer] time intervals).

Regarding claim 21, Bryant further describes:

path costs determined by the flood discovery of paths are used to substitute more efficient paths for less efficient paths (para. 6, calculation of shortest path tree substitutes lowest cost paths (more efficient paths) for higher cost paths (less efficient paths)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 4-6 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant in view of Luo as applied to claims 3 and 17 above respectively, and further in view of Kelsey (US 2005/0249215).

Regarding claim 4, Bryant fails to describe that the intermediate switches along the specific path each add cost information to the cost packet prior to forwarding the cost packet to a next switch along the specific path.

Kelsey describes that intermediate switches along the specific path each add cost information to the cost packet prior to forwarding the cost packet to a next switch along the specific path (fig. 2 & para. 52, intermediate nodes B & C increment the accrued cost field 228 within the unicast message 220A).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to specify that the intermediate switches along the specific path add cost information of the cost packet as in Kelsey for the cost packets in Bryant and Luo combined.

The motivation for combining the teachings is that such protocol with cost packet comprising an accrue cost field results is a more efficient routing (Kelsey, para. 31).

Regarding claim 5, Bryant further describes:

repeating the recalculation at periodic intervals (abstract & para. 35, updating (recalculating) routing information comprising cost metric after a delay).

Regarding claim 6, Bryant describes the use of cost packets, but fails to describe that the cost packet piggybacking information for more than one path.

Kelsey describes:

piggybacking information for more than one path into a packet (fig. 2 & para. 101, use of source routing comprises appending (piggybacking) each intermediate routing information to the cost-related packet 220B from source to destination).

Regarding claim 18, Bryant further describes:

repeating the recalculation at periodic intervals (abstract & para. 35, updating (recalculating) routing information comprising cost metric after a delay).

Regarding claim 19, Bryant describes the use of cost packets, but fails to describe that the cost packet piggybacking information for more than one path.

Kelsey describes:

piggybacking information for more than one path into a packet (fig. 2 & para. 101, use of source routing comprises appending (piggybacking) each intermediate routing information to the cost-related packet 220B from source to destination).

3. Claims 7 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant and Luo as applied to claims 1 and 9 above respectively, and further in view of Erhart (US 20050068941).

Regarding claim 7, Bryant fails to describe: previously defined paths are identified by path tags inserted into packets sent between the mesh switches.

Erhart describes: previously defined paths are identified by path tags inserted into packets sent between the mesh switches (Erhart, para. 10, using Multiprotocol Label Switching network comprises labels (path tags) for each transmission packet).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant in using a communication scheme with a MPLS-based network as in Erhart for network communication in Bryant and Luo.

The motivation for combining the teachings is that it leads to an increase of quality of service in a packet-switched network (para. 6).

Regarding claim 10, Bryant further describes:

start-up cost packets are flooded through the mesh in order to define the set of paths between each pair of mesh switches and calculate the start-up costs (para. 6, flooding of costs using LSP packets in order to calculate and determine the lowest cost paths between each network node pair), but fails to describe:

previously defined paths are identified by path tags inserted into packets sent between the mesh switches.

Erhart describes: previously defined paths are identified by path tags inserted into packets sent between the mesh switches (Erhart, para. 10, using Multiprotocol Label Switching network comprises labels (path tags) for each transmission packet).

Regarding claim 11, Bryant further describes:

repeating the recalculation at periodic intervals (abstract & para. 35, updating (recalculating) routing information comprising cost metric after a delay).

4. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant in view of Luo and Erhart as applied to claim 11, and further in view of Kelsey.

Regarding claim 12, Bryant and Erhart combined describe the use of cost packet, but fail to describe:

generation at a destination switch a cost protocol comprises generation at a destination switch a cost packet with path information associated with a specific path

that begins at a source switch and ends at the destination switch and unicast transmission of the cost packet via the specific path to the source switch.

Kelsey describes:

generation at a destination switch a cost protocol comprises generation at a destination switch a cost packet with path information associated with a specific path that begins at a source switch and ends at the destination switch and unicast transmission of the cost packet via the specific path to the source switch (para. 101, source routing comprises generation of cost-related packet similar to fig. 2 220A at the destination router/switch along with the entire source route comprising intermediate routing information back to the source router/switch).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to specify the use of source routing using the cost packet as in Kelsey for the cost packets in the combined teachings of Bryant, Luo and Erhart.

The motivation for combining the teachings is that such protocol with cost packet comprising an accrue cost field results is a more efficient routing (Kelsey, para. 31).

Regarding claim 13, Bryant, Luo, Erhart and Kelsey combined further describe:

the intermediate switches along the specific path each add cost information to the cost packet prior to forwarding the cost packet to a next switch along the specific path (Kelsey, fig. 2 & para. 52, intermediate nodes B & C increment the accrued cost field 228 within the unicast message 220A).

Regarding claim 14, Bryant, Luo, Erhart and Kelsey combined further describe:

piggybacking information for more than one path into a packet (Kelsey, fig. 2 & para. 101, use of source routing comprises appending (piggybacking) each intermediate routing information to the cost-related packet 220B from source to destination).

Response to Arguments

5. Applicant's arguments filed 1/8/2009 have been fully considered but they are not persuasive.

On p. 7 para. 8-12, the applicants argue that the combined references of Bryant and Luo fail to describe "a direct cost protocol". The examiner respectfully disagrees.

The examiner in the first Office Action equates Bryant's protocol which determines path cost in the direction from source to destination as "a directed cost protocol". In the last Office Action, the examiner attempts to strengthen applicant's previous argument of missing word "directed" by additionally citing the Luo reference with a directed (unidirectional) graph. The examiner still believes that the Bryant reference itself, although do not uses the literal word "directed", suggests the limitation "directed" because the path calculation is directional from the source to destination.

As for the above applicants' argument, the examiner asserts the rejection is proper because it is based on the interpretation of claim 1 in light of the specification. The above argument from the applicant is regarded as "**reading the limitations of the specification into the claim**" which is held invalid per MPEP 2111:

“The court explained the ‘reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is quite different thing from reading limitations of the specification into a claim .. i.e. the impermissible importation of subject matter from the specification into the claim. See also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed.Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the ‘PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.’)”

In summary, the conciseness of claim 1 allows reasonable interpretation per the rejection unless additional claim language is amended to narrow the scope of interpretation (i.e. adding limitations found in p. 14 of specification).

On p. 8 para. 14-15, the applicants argue that the motivation of Kelsey is inadequate for combining Kelsey with Bryant and Luo. In particular, they argue that Kelsey does not yield “a more efficient routing” (method) because Kelsey’s method does not use/affected by the accrued cost. The examiner respectfully disagrees.

The examiner would like to take this opportunity to expand his reasoning by additionally citing para. 74: “Each node updates its cost table for the cost of sending a packet from that node to the origin based on received link cost plus accrued_cost”, and although not used for routing decisions, the costs in cost table does determine whether

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if the received packets should be discarded or forwarded (para. 49), which refines the routing technique. Hence, the examiner's motivation of providing "a more efficient routing" holds.

On p. 8 para. 17, the applicants argue that "no reference to piggybacking (by that name or any other) can be found in Kelsey. The examiner respectfully disagrees.

The examiner understands that "appending" equates to "piggybacking". Both terms are synonymous with the definition of - additional data/information is added to existing data/information being sent.

On p. 9 para. 20-21, the applicants re-argue regarding the term "directed cost protocol" which has been responded above.

On p. 9-10 para. 24, the applicants argue that "there is no basis for assuming Erhart's labels identify paths between mesh switches." The examiner respectfully disagrees. The examiner understand that an MPLS label identify a single path between two adjacent switches in a network of (mesh) switches. Hence, an MPLS label indeed identify paths between mesh switches as claimed.

On p. 10 para. 28, the applicants re-argue regarding the term "directed cost protocol" which has been responded above.

On p. 10 para. 30, the applicants re-argue regarding the term "piggybacking" which has been responded above.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Nucci (US 7,395,351) describing method for assigning link weights, Fedyk (US 6,873,616) describing source routed selection using cost/metrics, Rexford (US 6,633,544) describing efficient pre-computation of QoS routes, Huang (US 6,301,244) describing QoS-oriented path selection, Bhatia (US 7,433,315) describing method for fast network re-optimization, Bare (US 2003/0142685).

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WARNER WONG whose telephone number is (571) 272-8197. The examiner can normally be reached on 6:30AM - 3:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chi H Pham/
Supervisory Patent Examiner, Art
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/W. W./
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